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VERIFICATION OF A TRANSLATION

I, the below named translator, hereby declare that:

My name and post office address are as stated below;

That I am knowledgeable in the French language in which the below identified international application was filed, and that, to the best of my knowledge and belief, the English translation of the amended sheets of the international application No. PCT/IB99/01930 is a true and complete translation of the amended sheets of the above identified international application as filed.

I hereby declare that all the statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the patent application issued thereon.

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_____ a slip agent, in this example 900 ppm of Erucamide® which is cis-13-docosenamide, a derivative of erucic acid, is added to at least one of the two outside layers of the film, that is to say to the one which will be on the inside of the passage forming the valve and which will therefore be in

contact with the straw for withdrawing the liquid so as to make it easier to slide inside the passage forming the valve produced using the film that is the subject of the present invention.

The middle layer of this film sandwiched between the abovementioned outside layers consists of a blend of 60% of PP, Moplen® EP-Q 30RF by Himont, a heterophasic copolymer the density d of which is 0.9 g/m^3, the melt index MI of which is 0.8 g/10 minutes according to ASTM D 1238/L and the Vicat softening temperature $T°_v$ of which is 150°C. This middle layer also contains 20% of the LLDPE used to form the two abovementioned outside layers and 20% of a thermoplastic polyolefin, Adflex® Q100F manufactured by Himont, the density d of which is 0.89 g/cm^3 and the melt index MI of which is 0.6 g/10 minutes according to ASTM D 1238.

The role of this thermoplastic polyolefin is to provide the polypropylene with enough elasticity to allow the film forming the valve and, in particular, the entry passage opening into the actual valve proper, to deform elastically when a bulged retaining part of the straw for withdrawing the liquid passes as it is introduced into this valve. What happens is that the length of the perimeter of this entry passage is chosen to correspond to that of the perimeter of this straw, so that once the bulged retaining part of this straw has been introduced, the passage closes up around the straw and prevents it from coming back out.

This middle layer of the film that is the subject of this invention also has the role of giving this film resistance to a temperature of 80° or to 90°C, so as to allow the enclosures or sachets, to which the valve formed by the film that is the subject of the present invention is attached, to be filled with drinks packaged at such temperatures. This hot-filling is performed for all sorts of drinks, particularly milk or milk-based drinks, and fruit juices. It must

maintain its properties, particularly its elastic properties, after the drink has been hot-packaged.

The film thus manufactured has also to be able to be welded without the welding causing it to degrade, that is to say that the film has to maintain its food compatibility with the drinks packaged.

The various tests carried out to develop this multilayer film have made it possible to observe that while the thickness of the film can be varied in a fairly broad range depending on the requirement, from 30 μm to about 120 μm. [sic] The thickness of the film is preferably as thin as possible so as to allow for high manufacturing rates. However, as the film is made up of three layers, it is necessary for the thicknesses of the respective layers to remain great enough that they can be coextruded. In addition, as the middle layer is preferably thicker than each of the outside layers, it is not possible in practice for it to drop below 30 μm. In the example produced, the film had a thickness of 40 μm, with a middle layer of 20 μm and two outside layers of 10 μm.

To allow the valve formed from the film that is the subject of this invention to close properly, this film has to have good flexibility. In the case of the LLDPE that forms the outside layers and forms part of the composition of the central layer, the flexibility is a function of the density d. This is why LLDPE was chosen, the density d of which can vary slightly within a range of between $0.919 < d < 0.930$ g/cm^3. For PP, the flexibility is a function of the density and of the melt index MI. The density d can vary between $0.895 < d < 0.905$ g/cm^3, while the melt index can vary between 0.75 and 0.85.

The Vicat temperature (which is the softening temperature of the material) of the various layers has not to differ too greatly, in order to allow them to be coextruded. In the abovementioned example, the Vicat point $T°_v$ of the LLDPE must be greater than 100°C, while that of the PP must be less than 160°C. As a

preference, these temperatures are between 110° and 150°C.

The proportion of slip agent, in this example Erucamide®, has to be less than 1300 ppm. Although this slip agent is needed only in the layer of the multilayer film adjacent to the face of this sheet that is intended to be situated on the inside of the valve passage, it is preferable for it to be incorporated into both outside layers, given that it is very difficult later to distinguish between these two outside layers and that there might therefore be a risk of the film being turned the wrong way up. By having both sides identical, this problem no longer exists.

As a preference, the film according to the invention, at least in its specific use for making the abovementioned valve, is not subjected to any corona oxidation treatment.

The single figure of the appended drawing depicts schematically and by way of example a plan view of a valve produced using a multilayer film that is the subject of the present invention.

This valve is intended to be inside a container, particularly a sealed sachet, not depicted, intended for packaging a liquid, particularly a drink. This figure shows two thicknesses 1a, 1b of this film which have been superposed. These two thicknesses of the film 1a, 1b are united by a weld line 2, creating between them a passage 3 forming the dispensing valve. A cut 4 allows the passage 3 to communicate with the outside, that is to say with the contents of the container. This passage 3 is normally closed, the two thicknesses of film 1a, 1b being contiguous. It is by introducing an element to part them that the valve opens and liquid can therefore flow between the inside of the container and the outside along the passage 3. The element used to open the passage 3 is itself formed by a pipe, particularly by a straw 5.

The end of this straw has a bulge 5a, as described in EP 0 931 489-A, published after the

priority date of the current patent application. The entry portion 3a of the valve passage 3 is narrowed and has a perimeter corresponding to that of the straw 5, so that this entry portion 3a fits around this straw 5 and opposes the passage of the bulged part 5a. In order to allow the straw 5 to be introduced through this narrowed entry portion 3a, the front end of the bulged part 5a of the straw 5 has a cross section that increases gradually, while the rear of this bulged part is connected by a bearing surface to the cylindrical part of the straw 5, which prevents it from coming back out through the entry portion 3a of the passage 3.

In order to obtain this fit of the entry portion 3a of the passage 3 around the straw, while however allowing the bulged part 5a to pass, the multilayer film 1a, 1b forming this valve has to have enough elasticity to close up again around the straw 5 once this bulged part 5a has passed. This is, in particular, on of the roles of the multilayer film that is the subject of the invention.

CLAIMS

1. Multilayer composite film of food grade quality, the thickness of which is between 30 μm and 120 μm, comprising a middle layer based on PP sandwiched between two outside layers of LLDPE, the density d of which is between $0.919 < d < 0.930$ g/cm^3, characterized in that the middle layer contains 50-70% by weight of PP the density d of which is $0.895 < d < 0.905$ g/cm^3 and the melt index of which is between 0.75 and 0.85 g/10 minutes, 10-30% by weight of said LLDPE and 10-30% by weight of a thermoplastic polyolefin the density d of which is $0.885 < d < 0.905$ g/cm^3 and the melt index of which is between 0.55 and 0.65 g/10 minutes.

2. Composite film according to Claim 1, characterized in that the Vicat temperature $T°_v$ of the LLDPE is greater than 100°C, while that of the PP is less than 160°C.

3. Composite film according to one of the preceding claims, characterized in that its thickness is less than 60 μm.

4. Composite film according to one of the preceding claims, characterized in that the thickness of the middle layer is practically twice that of each of the two outside layers.

5. Composite film according to one of the preceding claims, characterized in that it is not subjected to any corona oxidation treatment.

6. Composite film according to one of the preceding claims, characterized in that at least one of the outside layers of said film contains up to 1300 ppm of a slip agent.

7. Composite film according to Claim 6, characterized in that said slip agent is Erucamide®.

8. Use of the composite film according to one of the preceding claims to form a valve for controlling the dispensing of a drink, consisting of the superposition of two layers (1a, 1b) of said film

welded along two non-converging lines (2) to form a distribution passage (3) by parting said layers (1a, 1b), the perimeter of the entry section (3a) of this distribution passage (3) corresponding to that of a withdrawing pipe (5) intended to part said layers (1a, 1b) so as to fit around this withdrawing pipe (5), this film having enough elasticity to allow a bulge (5a) of gradually increasing cross section, belonging to said withdrawing pipe (5) and followed by a bearing surface connecting this bulge (5a) to said withdrawing pipe (5a [sic]) to be introduced, preventing it from being withdrawn from said passage (3).

9. Use according to Claim 8, characterized in that said outside layer of said film, to which a slip agent is added, is the layer adjacent to said passage (3).